PHYTOTOXICOLOGY SECTION INVESTIGATION IN THE VICINITY OF THE TRUSCAN PROPERTY LANDRY STREET, VANIER ON AUGUST 9 AND NOVEMBER 28, 1990

JANUARY 1992

Ontario
Environment
Environnement

ISBN 0-7729-9196-0

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Report prepared by:

Air Resources Branch
Ontario Ministry of the Environment

January 1992

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PIBS 1770

Section 1: Background

On July 31, 1990 the Phytotoxicology Section, Air Resources Branch, Ministry of the Environment received a request from Mr. D. Fumerton of the Ottawa District Office, Ministry of the Environment for a preliminary soil survey in the immediate vicinity of the Truscan property on Landry St. in Vanier. A preliminary report of soil testing on the Truscan property conducted by Fondex Consulting Engineers had indicated that there were elevated levels of lead, molybdenum, cadmium, arsenic, nitrogen, selenium, oil & grease, copper and zinc at various depths and locations.

On August 9, 1990 Mr. Randall D. Jones and technical staff of the Phytotoxicology Section conducted a preliminary soil survey to characterize the inorganic contamination in surface soil on residential and school property adjacent to the Truscan properties.

As the result of the discovery of elevated concentrations of some elements at some sample sites during the preliminary survey, the Ottawa District office requested that additional sampling be carried out. On November 28, 1990 samples were collected at twenty five additional residential properties east of Landry St. in order to better delineate the area of elevated heavy metals found in the preliminary survey. The following is a report of the results of both the preliminary and follow up surveys.

Section 2: Methods

In the preliminary survey of August 9, 1990, soil samples were collected at 16 locations in the vicinity of the Truscan Property on Landry St. (see Figure 1). Six of the sampling sites were on the Ecole Baribeau property and the other ten sites were from the backyards of residential properties. Duplicate soil samples were taken at two depths, 0 to 5 cm and 5 to 15 cm. The samples where collected using standard Phytotoxicology sampling techniques (1).

During the preliminary survey, garden vegetable samples were collected at those sampling locations where there were gardens on the property. The presence of vegetable gardens was one of the major criteria for selecting a property to sample. However, there were very few vegetable gardens in the area of interest. Garden vegetables were collected at sampling sites 11, 12 and 13. String beans were the only vegetable that was grown at all three sites. As the gardens were quite small, there was not enough material to collect duplicate samples.

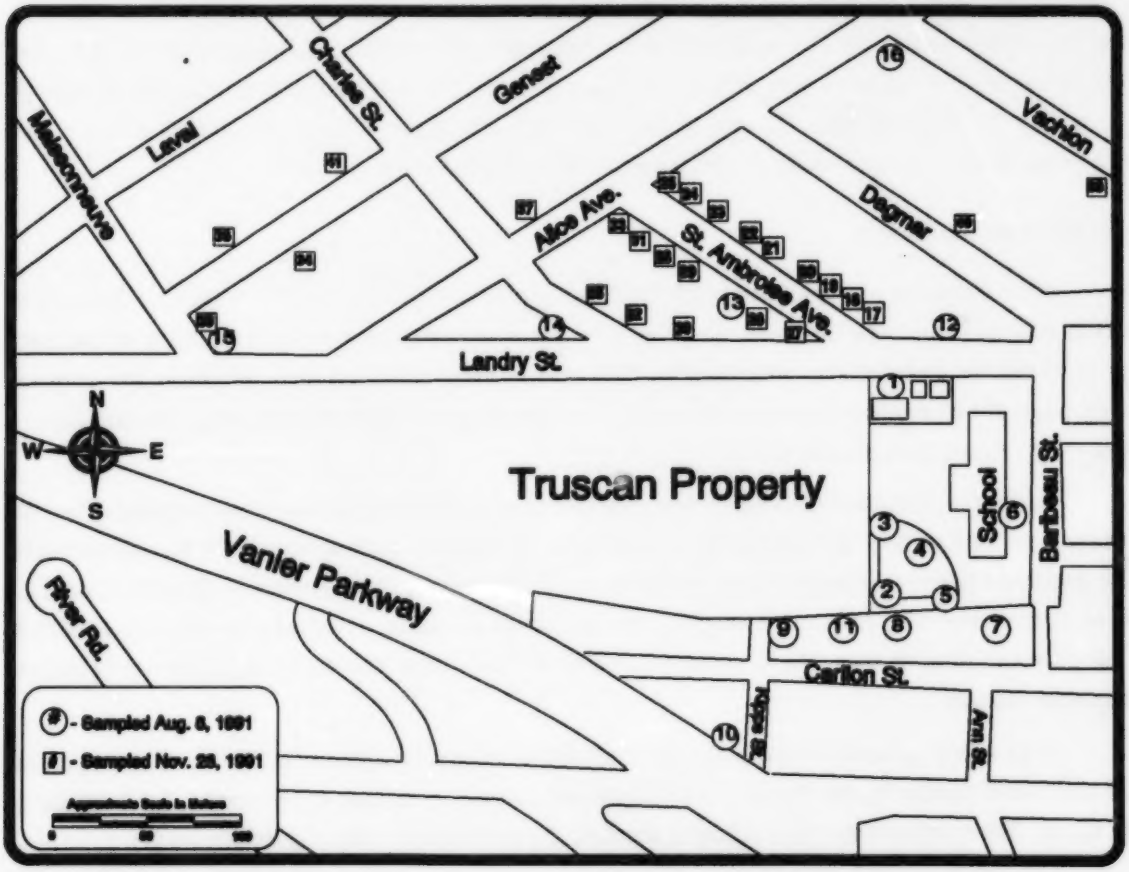
In the follow up survey of November 28, 1990 soil samples were collected at 25 residential properties located east of Landry St. (see Figure 1). Duplicate soil samples were taken at two depths, 0 to 5 cm and 5 to 15 cm. The samples were collected using standard Phytotoxicology sampling techniques (1).

All the samples were delivered to the Phytotoxicology Section sample processing laboratory in Toronto where they were dried and ground before being submitted to the Inorganic Trace Contaminants Section, Laboratory Services Branch for inorganic chemical analysis. The soil samples from the preliminary survey were analyzed for antimony, aluminum, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, chloride, cobalt, copper, fluoride, iron, lead, magnesium, manganese, mercury, molybdenum, nickel,

nitrogen, selenium, silver, sodium, strontium, sulphur, titanium, uranium, vanadium and zinc. The garden vegetables were analyzed for aluminum, antimony, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, selenium, sodium, strontium, vanadium and zinc.

The number of parameters analyzed for in the samples collected in the follow up survey of November 28 were reduced as many of the elements tested for in the preliminary survey were found to be within normal levels. The samples from the November 28 survey were analyzed for antimony, aluminum, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, sodium, strontium, vanadium and zinc.

Figure 1: Sketch Map Showing the Approximate Location of the Soil Sampling Sites on August 9, 1990 (16) and November 28, 1990 (25) in the Vicinity of the Truscan Property, Landry St., Vanier Samples



Section 3: Results

The results of the chemical analysis for the 30 inorganic elements in the soil samples (sites 1-16) from the preliminary survey done on August 9 are given in Appendix A, Tables 1 to 5. The results of the chemical analysis for the 18 inorganic elements in the soil samples (sites 17-41) from the November 28 survey are

shown. The elements are listed in alphabetical order. Also listed in each table are the Phytotoxicology Section Urban Upper Limits of Normal(2) for each element, where available, and the Clean-Up Guidelines and Provisional Clean-Up guidelines for each element, where available, as listed in the Ministry Publication "Guidelines for the Decommissioning and Cleanup of Sites in Ontario"(3). Levels exceeding the Upper Limits of Normal (ULN) have been indicated in bold underlined type while levels exceeding the Decommissioning and Cleanup Guidelines (D.&C. G.) are in italics. The results are expressed as µg/g dry weight and are the mean of the duplicate samples collected at each site. Where the difference between the duplicate samples was greater than a factor of two then both results are given.

The results of the chemical analysis for the seventeen inorganic elements in washed garden vegetables collected on August 9 are given in Appendix A, Table 6. The elements are listed in alphabetical order. Also listed in this table are the Phytotoxicology Section Urban Upper Limits of Normal for foliage for each element, where available. In the case of the garden vegetables that were sampled the ULN only apply to the lettuce. There are no ULNs for green bean fruit or potatoe tubers. Levels exceeding the ULNs have been indicated in bold underlined type. The results are expressed as µg/g dry weight.

Contour maps for antimony, arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, selenium, strontium, zinc in soil at the 0-5cm and 5-15 cm sampling depths were produced using the graphics program "Surfer version 4.0" and are given in Appendix A, Figures 2 to 23 respectively. These maps are only statistical approximations of the spatial distribution of the different contaminants. The maps are only to be used to provide information on the approximate areas and/or patterns of contamination. They can not be used to determine the actual concentration of a contaminant at a location where samples were not taken.

The contours produced by the program are significantly affected by the spatial distribution of the sampling sites, the accuracy of the positional information for the sampling sites, and the program options used to generate the contours. As the contours are affected by the spatial distribution of the sampling sites, the accuracy of the contours falls off at the edges of the map and in large areas where there are no sampling sites. Contours near the edge of the map should be interpreted with caution. Large areas without sampling sites have been blocked out so no contours were drawn through them.

The program options used in generating the contours remained constant for each map. The options used for the maps in this report are given below

Grid Interpolation Method	:	Kriging
Search Method	:	Normal
Search Radius	:	Full Width of Map
No. of Nearest Points	:	10
Grid Size	:	25 x 25
Contour (in line) Smoothing	:	Yes
Tension Factor	:	2

The contour interval, minimum contour and maximum contour for each map are given at the bottom of each map. The units of measurement for the contours are the same as in the following tables. The location of the sampling sites are indicated by an asterisk and the approximate locations of major features such as roads are shown.

Section 4: Discussion

While the sampling was being conducted, a number of residents in the area stated that they believed that the area had once been a landfill site in the 1930's. While there is no existing documentation confirming that the area in question was once a landfill site, the soil samples from all of the sites sampled contained material consistent with the site having once been a landfill. In general, the soil below 5 cm was difficult to sample because of the large amount of coal cinders, glass and other debris in the soil. The one exception to this was in that part of the ball diamond in the Ecole Baribeau yard which consisted of crushed gravel.

The levels for 29 of the 30 elements tested were low at all six sites sampled on the school property. All levels, for which ULNs exist, were well within the ULN guidelines. The preliminary results of the survey of the Truscan Property had indicated that elevated lead levels may have extended into the school playground area. The levels of lead in the school yard were very low. Strontium at sampling Site 4, at both sampling depths, was significantly higher than all of the other sites sampled on the school property, see Figure 20 and 21. As this sample site consisted entirely of crushed stone, the difference in the strontium levels at this site may be due entirely to the higher levels of naturally occurring strontium in the stone. There is no ULN for strontium.

The levels of contaminants on the residential properties located at sites 7 and 8 along Carilon St., immediately south of the school, were all below the Urban ULNs. For the age of the houses, the levels were quite low at these sites. At Sites 9, 10 and 11 along Carilon St., immediately south of the Truscan property, the levels of antimony, arsenic, copper, lead, mercury, molybdenum, nickel and zinc were elevated with respect to the other properties on the street. However, with the one exception of molybdenum at site 11, which exceeded the Urban ULN guideline for soil, the levels at sites 9, 10 and 11 were still significantly lower than the Urban ULN guidelines.

The levels of contaminants on the residential properties to the north of the Truscan Property in the Landry St. area were significantly higher than those from the Carilon St. properties. The general pattern of contamination was similar for arsenic, cadmium, chromium, copper, iron, lead, mercury, molybdenum, selenium, strontium and zinc. The highest levels were found immediately north of the Truscan Property in the area of St. Ambroise Ave. The levels generally fell off rapidly to the north and west of this area. The levels to the west and north west of St. Ambroise appear to fall off more slowly, but it is difficult to determine as there were only three sites collected to the south of St. Ambroise Ave. While the pattern of contamination for these elements was consistent, the variability between adjacent properties in the St. Ambroise Ave. area was quite large. This variability was largely correlated with the thickness of the surface top soil above the cinders and debris. Where debris was found at shallow depths the levels of contaminants were higher than an adjacent property where debris was not observed until 10 to 15 cm. The Urban ULNs for arsenic, cadmium, chromium, copper, iron, lead, mercury, molybdenum, selenium, strontium and zinc in soil at a number of sites in the St. Ambroise Ave. area were exceeded. Generally, there were more exceedences of the ULNs in the deeper 5 to 15 cm samples than in the 0 to 5 cm samples. This followed the general trend of higher levels of most contaminants in the 5 to 15 cm soil samples.

The high amount of variability between the duplicate samples, and the higher levels of contaminats at depth, is consistent with the area having once been a landfill site. With the sampling protocol used, a large amount of sample to sample variation would not be expected.

Site 16 was initially selected as a control site, being two blocks away from the Truscan property. However, coal cinders and glass also were found in the soil at this location. The levels of contaminants at this site were generally lower than those in the St. Ambroise Ave. area. The one exception was molybdenum, which exceeded the Urban ULN guideline. Further attempts to get control samples were abandoned as it was apparent that the full extent of the old landfill was not known.

Section 5: Summary

The results of the preliminary and follow up surveys of surface soils indicate that the elevated levels of heavy metals found on the Truscan property extended to the east and to a lesser extent to the west of the property. The Upper Limits of Normal and the Decommissioning and Cleanup Guidelines for soil were exceeded for arsenic, copper, lead, mercury, molybdenum, and selenium. In addition, the soil ULNs also were exceeded for antimony, iron and zinc. The foliar sodium, selenium and molybdenum ULNs were exceeded in lettuce foliage at one garden. The majority of exceedences of the Urban Upper Limits of Normal for soil occurred in the area of St. Ambroise Ave., immediately west of the Truscan property. The levels were generally higher in the 5 to 15 cm depth than in the 0 to 5 cm depth. The large variability in contamination of the surface soil from one property to the next appeared to be related to the amount of top soil encountered at the sampling site. With the exception of strontium at one site in the school playground, there was no evidence of elevated heavy metals in the top 15 cm of soil on the school or residential properties immediately southwest of the Truscan property.

While the results of the surveys indicated that there was a consistent pattern of elevated levels of heavy metals in soil centered in the St. Ambroise Ave. area, the full extent of the contamination was not defined. Additional sampling should be conducted to the south and southeast of St. Ambroise Ave. in order to better define the extent of the contamination.

Appendix A: Tables and Figures

Table 1: Results of Chemical Analysis for Antimony, Aluminum, Arsenic, Barium, Beryllium and Boron in Soil Collected in the Vicinity of the Truscan Property, Landry St., Vanier on August 9 and November 28, 1990.

Site Number	Soil Depth	Antimony µg/g	Aluminum µg/g	Arsenic µg/g	Barium µg/g	Beryllium µg/g	Boron µg/g
1	0-5 cm	<0.2	10,000	4.3	45	<0.5	1.5
	5-15 cm	<0.2	12,000	6.1	49	<0.5	2.0
2	0-5 cm	<0.2	9,900	1.6	79	0.6	8.9
	5-15 cm	<0.2	9,800	1.4	78	0.7	3.6
3	0-5 cm	0.22	9,200	3.3	91	0.6	6.3
	5-15 cm	<0.2	11,000	1.9	105	0.6	6.5
4	0-5 cm	<0.2	4,600	0.85	57	<0.5	3.6
	5-15 cm	<0.2	2,600	0.55	65	<0.5	1.0
5	0-5 cm	<0.2	9,700	1.3	75	<0.5	9.0
	5-15 cm	<0.2	9,600	1.3	79	0.6	6.4
6	0-5 cm	<0.2	7,900	3.7	43	<0.5	4.3
	5-15 cm	<0.2	7,900	3.8	38	<0.5	<0.5
7	0-5 cm	<0.2	7,900	1.9	42	<0.5	2.5
	5-15 cm	<0.2	7,300	1.6	36	<0.5	7.1
8	0-5 cm	<0.2	8,100	1.3	33	<0.5	5.7
	5-15 cm	<0.2	12,000	3.9	69	0.8	3.1
9	0-5 cm	1.9	9,000	5.5	88	<0.5	3.0
	5-15 cm	2.0	9,800	6.7	130	<0.5	2.7
10	0-5 cm	<0.2	13,000	1.6	60	<0.5	3.8
	5-15 cm	<0.2	12,000	1.9	67	<0.5	3.7
11	0-5 cm	0.22	19,000	4.9	130	1.0	6.7
	5-15 cm	0.21	21,000	4.3	130	1.0	4.8
12	0-5 cm	0.27	9,200	2.2	78	<0.5	5.4
	5-15 cm	0.24	7,100	2.0	64	<0.5	3.0
13	0-5 cm	3.1	9,000	8.0	290	<0.5	4.7
	5-15 cm	**12.0**	9,700	17	550	0.5	9.7
14	0-5 cm	1.3	11,000	3.5	110	<0.5	3.4
	5-15 cm	0.42	11,000	3.4	98	<0.5	1.0
15	0-5 cm	1.6	12,000	6.7	200	0.7	5.6
	5-15 cm	1.9	14,000	7.4	260	0.8	11.4
16	0-5 cm	0.75	11,000	3.9	78	0.6	5.3
	5-15 cm	1.2	12,000	4.3	84	<0.5	6.1
ULN		8	NE	20	NE	NE	15
D&CG		25*	NE	25	1000*	5*	NE

NE - no guideline has been established for this contaminant.
< - the concentration was below the detection limit of the analytical instrumentation.
* - provisional D&CG

Table 1: Continued

Site Number	Soil Depth	Antimony µg/g	Aluminum µg/g	Arsenic µg/g	Barium µg/g	Beryllium µg/g	Boron µg/g
17	0-5 cm	0.53	13,000	7.6	NA	NA	NA
	5-15 cm	0.48,3.8	13,000	5.8	NA	NA	NA
18	0-5 cm	4.3	10,000	9.3	NA	NA	NA
	5-15 cm	7.7	10,000	8.3,19	NA	NA	NA
19	0-5 cm	0.51	9,400	4.3	NA	NA	NA
	5-15 cm	0.98	9,400	6.6	NA	NA	NA
20	0-5 cm	2.2	9,000	6.4	NA	NA	NA
	5-15 cm	3.2	9,000	7.1	NA	NA	NA
21	0-5 cm	0.66	12,000	3.5	NA	NA	NA
	5-15 cm	0.77	9,600	3.6	NA	NA	NA
22	0-5 cm	6.5	9,700	12	NA	NA	NA
	5-15 cm	8.0	10,000	16	NA	NA	NA
23	0-5 cm	0.91	9,200	4.0	NA	NA	NA
	5-15 cm	0.82	9,700	4.1	NA	NA	NA
24	0-5 cm	4.9	12,000	12	NA	NA	NA
	5-15 cm	5.1	12,000	15	NA	NA	NA
25	0-5 cm	3.1	11,000	9.0	NA	NA	NA
	5-15 cm	2.7	9,100	9.8	NA	NA	NA
26	0-5 cm	**8.5**	12,000	21	NA	NA	NA
	5-15 cm	**11**	12,000	***30***	NA	NA	NA
27	0-5 cm	1.7	11,000	4.9	NA	NA	NA
	5-15 cm	**16**	9,800	9.7,***100***	NA	NA	NA
28	0-5 cm	4.4	13,000	14	NA	NA	NA
	5-15 cm	6.1	14,000	19	NA	NA	NA
29	0-5 cm	3.2	9,300	8.0	NA	NA	NA
	5-15 cm	4.5	9,200	11	NA	NA	NA
ULN		8	NE	20	NE	NE	15
D&CG		25*	NE	25	1000*	5*	NE

NE - no guideline has been established for this contaminant.
< - the concentration was below the detection limit of the analytical instrumentation.
* - provisional D&CG
NA - not analyzed for in the November 28 samples.

Table 1: Continued

Site Number	Soil Depth	Antimony µg/g	Aluminum µg/g	Arsenic µg/g	Barium µg/g	Beryllium µg/g	Boron µg/g
30	0-5 cm	2.7	15,000	8.5	NA	NA	NA
	5-15 cm	3.4	13,000	8.8	NA	NA	NA
31	0-5 cm	0.38	13,000	2.3	NA	NA	NA
	5-15 cm	1.4,9.8	11,000	4.6	NA	NA	NA
32	0-5 cm	1.5	13,000	5.3	NA	NA	NA
	5-15 cm	2.6	11,000	6.6	NA	NA	NA
33	0-5 cm	1.3	12,000	3.9	NA	NA	NA
	5-15 cm	2.3	11,000	4.5	NA	NA	NA
34	0-5 cm	1.9	8,900	5.3	NA	NA	NA
	5-15 cm	3.6	10,000	9.4	NA	NA	NA
35	0-5 cm	2.8	12,000	6.4	NA	NA	NA
	5-15 cm	3.9	11,000	8.2	NA	NA	NA
36	0-5 cm	0.64	10,000	3.3	NA	NA	NA
	5-15 cm	0.56	11,000	3.2	NA	NA	NA
37	0-5 cm	1.1	8,500	3.3	NA	NA	NA
	5-15 cm	0.79	7,300	2.0	NA	NA	NA
38	0-5 cm	2.3	13,000	6.9	NA	NA	NA
	5-15 cm	2.7	14,000	8.4	NA	NA	NA
39	0-5 cm	1.0	8,900	2.2	NA	NA	NA
	5-15 cm	1.5	9,500	3.4	NA	NA	NA
40	0-5 cm	4.5	14,000	8.0	NA	NA	NA
	5-15 cm	11	15,000	9.8	NA	NA	NA
41	0-5 cm	0.71	15,000	3.1	NA	NA	NA
	5-15 cm	1.2,8.3	15,000	4.9	NA	NA	NA
ULN		8	NE	20	NE	NE	15
D&CG		25*	NE	25	1000*	5*	NE

NE - no guideline has been established for this contaminant.
< - the concentration was below the detection limit of the analytical instrumentation.
* - provisional D&CG
NA - not analyzed for in the November 28 samples.

Table 2: Results of Chemical Analysis for Cadmium, Calcium, Chromium, Chloride, Cobalt and Copper in Soil Collected in the Vicinity of the Truscan Property, Landry St., Vanier on August 9 and November 28, 1990.

Site Number	Soil Depth	Cadmium µg/g	Calcium µg/g	Chromium µg/g	Chloride µg/g	Cobalt µg/g	Copper µg/g
1	0-5 cm	0.13	7000	23	6.6	7.4	14
	5-15 cm	0.17	9000	27	3.8	9.0	17
2	0-5 cm	<0.05	10000	21	3.6	9.8	18
	5-15 cm	0.08	8700	21	<0.5	9.6	15
3	0-5 cm	0.14	53000	19	2	11	27
	5-15 cm	<0.05	17000	22	<0.5	11	21
4	0-5 cm	<0.05	18000	10	<0.5	9.6	11
	5-15 cm	0.14	32000	8	<0.5	9.9	12
5	0-5 cm	<0.05	9100	22	1.5	9.8	18
	5-15 cm	<0.05	7500	23	<0.5	10	12
6	0-5 cm	<0.05	6100	18	11	7.9	15
	5-15 cm	<0.05	5300	17	4.2	7.7	12
7	0-5 cm	0.13	11000	24	8.3	10.3	17
	5-15 cm	<0.05	27000	22	4.7	10	19
8	0-5 cm	<0.05	4700	17	4.1	7.7	10
	5-15 cm	0.15	11000	25	1.4	16	31
9	0-5 cm	0.10	6400	28	12	11	38
	5-15 cm	0.55	5800	30	3.8	14	45
10	0-5 cm	0.77	16000	30	5.6	13	20
	5-15 cm	0.78	39000	29	3.3	13	24
11	0-5 cm	1.4	8200	34	7.5	18	37
	5-15 cm	1.1	8300	35	4.9	18	32
12	0-5 cm	1.0	9100	29	6.7	11	29
	5-15 cm	0.78	7100	21	3.9	9.2	22
13	0-5 cm	1.5	9400	30	18	17	84
	5-15 cm	3.3	19000	43	13	23	**170**
14	0-5 cm	0.93	10000	23	9.7	13	35
	5-15 cm	0.94	11000	26	9.5	13	33
15	0-5 cm	1.5	14000	30	18	18	91
	5-15 cm	1.7	16000	34	23	21	**130**
16	0-5 cm	1.3	8900	27	17	16	22
	5-15 cm	1.1	10000	25	10	17	25
ULN		4	NE	50	NE	25	100
D&CG		4	NE	1000	NE	50	200

NE - no guideline has been established for this contaminant.
< - the concentration was below the detection limit of the analytical instrumentation.

Table 2: Continued

Site Number	Soil Depth	Cadmium µg/g	Calcium µg/g	Chromium µg/g	Chloride µg/g	Cobalt µg/g	Copper µg/g
17	0-5 cm	0.72	NA	31	NA	6.5	37
	5-15 cm	0.76	NA	41	NA	7.5	56
18	0-5 cm	3.5	NA	35	NA	8.3	85
	5-15 cm	2.0	NA	36	NA	9.1	100
19	0-5 cm	0.50	NA	27	NA	5.4	27
	5-15 cm	0.72	NA	27	NA	5.9	33
20	0-5 cm	0.59	NA	27	NA	5.9	49
	5-15 cm	0.78	NA	30	NA	6.4	81
21	0-5 cm	0.49	NA	31	NA	7.0	36
	5-15 cm	0.72	NA	23	NA	4.7	32
22	0-5 cm	1.4	NA	40	NA	9.3	**103**
	5-15 cm	1.7	NA	40	NA	9.3	**130**
23	0-5 cm	1.1	NA	32	NA	6.3	27
	5-15 cm	0.63	NA	31	NA	5.8	26
24	0-5 cm	1.5	NA	42	NA	11	**140**
	5-15 cm	1.4	NA	45	NA	12	**170**
25	0-5 cm	1.3	NA	34	NA	10	90
	5-15 cm	0.93	NA	36	NA	7.1	67
26	0-5 cm	2.3	NA	50	NA	15	***230***
	5-15 cm	3.0	NA	**60**	NA	19	***320***
27	0-5 cm	0.61	NA	29	NA	6.5	68
	5-15 cm	1.7	NA	37	NA	10	**140*650***
28	0-5 cm	2.1	NA	**63**	NA	12	**140**
	5-15 cm	2.2	NA	**62**	NA	15	**180**
29	0-5 cm	1.7	NA	32	NA	8.2	74
	5-15 cm	1.8	NA	36	NA	10	**130**
ULN		4	NE	50	NE	25	100
D&CG		4	NE	1000	NE	50	200

NE - no guideline has been established for this contaminant.
< - the concentration was below the detection limit of the analytical instrumentation.
NA - not analyzed for in the November 28 samples.

Table 2: Continued

Site Number	Soil Depth	Cadmium µg/g	Calcium µg/g	Chromium µg/g	Chloride µg/g	Cobalt µg/g	Copper µg/g
30	0-5 cm	1.3	NA	**71**	NA	9.5	92
	5-15 cm	1.4	NA	50	NA	10	**120**
31	0-5 cm	0.32	NA	29	NA	7.4	30
	5-15 cm	0.97	NA	28	NA	6.7	50
32	0-5 cm	0.59	NA	33	NA	7.0	52
	5-15 cm	0.71	NA	28	NA	7.6	69
33	0-5 cm	0.34	NA	25	NA	6.2	36
	5-15 cm	0.70	NA	30	NA	7.6	65
34	0-5 cm	0.94	NA	26	NA	6.8	62
	5-15 cm	1.3	NA	33	NA	9.7	**120**
35	0-5 cm	0.90	NA	37	NA	9.6	83
	5-15 cm	0.97	NA	40	NA	11	**120**
36	0-5 cm	0.87	NA	23	NA	6.0	45
	5-15 cm	0.69	NA	26	NA	6.8	45
37	0-5 cm	0.70	NA	24	NA	5.7	45
	5-15 cm	0.25	NA	17	NA	4.8	26
38	0-5 cm	1.2	NA	33	NA	9.2	85
	5-15 cm	1.3	NA	42	NA	12	**110**
39	0-5 cm	0.36	NA	23	NA	5.3	35
	5-15 cm	0.52	NA	20	NA	6.4	66
40	0-5 cm	1.4	NA	44	NA	9.9	89
	5-15 cm	1.6	NA	47	NA	14	**220**
41	0-5 cm	0.42	NA	28	NA	7.5	46
	5-15 cm	0.76	NA	32	NA	9.0	67
ULN		4	NE	50	NE	25	100
D&CG		4	NE	1000	NE	50	200

NE - no guideline has been established for this contaminant.
< - the concentration was below the detection limit of the analytical instrumentation.
NA - not analyzed for in the November 28 samples.

Table 3: Results of Chemical Analysis for Fluoride, Iron, Lead, Magnesium, Manganese and Mercury in Soil Collected in the Vicinity of the Truscan Property, Landry St., Vanier on August 9 and November 28, 1990.

Site Number	Soil Depth	Fluoride µg/g	Iron µg/g	Lead µg/g	Magnesium µg/g	Manganese µg/g	Mercury µg/g
1	0-5 cm	110	12,000	22	3200	240	0.05
	5-15 cm	100	14,000	24	3900	300	0.06
2	0-5 cm	210	14,000	2	4100	210	0.04
	5-15 cm	230	14,000	5	4100	180	0.01
3	0-5 cm	250	12,000	43	4900	220	0.06
	5-15 cm	230	14,000	13	4700	200	0.04
4	0-5 cm	120	6,400	<2	5400	290	<0.01
	5-15 cm	80	3,200	2	7400	330	<0.01
5	0-5 cm	200	13,000	<2	3200	190	0.02
	5-15 cm	230	13,000	<2	3300	170	0.02
6	0-5 cm	81	11,000	38	2300	180	0.08
	5-15 cm	70	11,000	22	2000	170	0.12
7	0-5 cm	120	14,000	23	3000	290	0.04
	5-15 cm	120	12,000	20	2800	220	0.02
8	0-5 cm	90	11,000	7	2000	200	0.03
	5-15 cm	160	20,000	36	4700	310	0.06
9	0-5 cm	170	15,000	210	2900	250	0.28
	5-15 cm	170	17,000	210	3300	330	0.32
10	0-5 cm	170	14,000	57	5200	240	0.05
	5-15 cm	180	14,000	36	6100	240	0.04
11	0-5 cm	210	29,000	94	6400	320	0.10
	5-15 cm	230	30,000	78	6700	330	0.13
12	0-5 cm	140	13,000	85	3600	230	0.14
	5-15 cm	120	11,000	67	2800	180	0.09
13	0-5 cm	140	21,000	440	2700	350	**0.80**
	5-15 cm	150	33,000	**920**	3000	460	***1.8***
14	0-5 cm	140	15,000	170	4200	240	0.16
	5-15 cm	150	16,000	120	4300	250	0.13
15	0-5 cm	190	20,000	290	5800	400	0.27
	5-15 cm	180	24,000	350	5900	450	0.33
16	0-5 cm	260	17,000	65	4600	480	0.05
	5-15 cm	260	19,000	50	5400	550	0.05
ULN		NE	35,000	500	NE	700	0.5
D&CG		NE	NE	500	NE	NE	1.0

NE - no guideline has been established for this contaminant.
< - the concentration was below the detection limit of the analytical instrumentation.

Table 3: Continued

Site Number	Soil Depth	Fluoride µg/g	Iron µg/g	Lead µg/g	Magnesium µg/g	Manganese µg/g	Mercury µg/g
17	0-5 cm	NA	18,000	91	NA	430	0.11
	5-15 cm	NA	21,000	80,280	NA	450	0.13
18	0-5 cm	NA	23,000	470	NA	320	0.43
	5-15 cm	NA	26,000	***590***	NA	310	**0.53**
19	0-5 cm	NA	15,000	160	NA	260	0.22
	5-15 cm	NA	17,000	300	NA	280	0.17,0.43
20	0-5 cm	NA	17,000	310	NA	260	0.36
	5-15 cm	NA	18,000	420	NA	250	0.50
21	0-5 cm	NA	17,000	110	NA	340	0.22
	5-15 cm	NA	14,000	160	NA	220	0.32
22	0-5 cm	NA	24,000	***610***	NA	340	***1.1***
	5-15 cm	NA	25,000	***750***	NA	350	**0.94**
23	0-5 cm	NA	14,000	110	NA	230	0.19
	5-15 cm	NA	15,000	91	NA	220	0.26
24	0-5 cm	NA	27,000	***730***	NA	550	**1.4**
	5-15 cm	NA	28,000	***760***	NA	580	**1.1,3.3**
25	0-5 cm	NA	22,000	470	NA	380	0.48
	5-15 cm	NA	16,000	350	NA	280	0.39
26	0-5 cm	NA	**38,000**	***860***	NA	550	**2.0**
	5-15 cm	NA	**54,000**	***1300***	NA	690	**1.7**
27	0-5 cm	NA	17,000	170	NA	280	**0.53**
	5-15 cm	NA	26,000	***740***	NA	400	**2.3**
28	0-5 cm	NA	29,000	***760***	NA	530	***1.1***
	5-15 cm	NA	**37,000**	***870***	NA	570	***1.2***
29	0-5 cm	NA	20,000	440	NA	290	**0.71**
	5-15 cm	NA	26,000	***600***	NA	340	**0.94**
ULN		NE	35,000	500	NE	700	0.5
D&CG		NE	NE	500	NE	NE	1.0

NE - no guideline has been established for this contaminant.
< - the concentration was below the detection limit of the analytical instrumentation.
NA - not analyzed for in the November 28 samples.

Table 3: Continued

Site Number	Soil Depth	Fluoride µg/g	Iron µg/g	Lead µg/g	Magnesium µg/g	Manganese µg/g	Mercury µg/g
30	0-5 cm	NA	26,000	290	NA	680	**1.1**
	5-15 cm	NA	27,000	400	NA	620	**1.4**
31	0-5 cm	NA	18,000	45	NA	330	0.07
	5-15 cm	NA	19,000	200	NA	340	0.28
32	0-5 cm	NA	20,000	230	NA	290	0.34
	5-15 cm	NA	22,000	320	NA	310	**0.51**
33	0-5 cm	NA	17,000	130	NA	410	0.34
	5-15 cm	NA	18,000	310	NA	350	**0.65**
34	0-5 cm	NA	17,000	340	NA	270	0.37
	5-15 cm	NA	25,000	***550***	NA	370	**0.59**
35	0-5 cm	NA	22,000	380	NA	360	**0.55**
	5-15 cm	NA	24,000	***510***	NA	410	**0.89**
36	0-5 cm	NA	16,000	130	NA	330	0.13
	5-15 cm	NA	16,000	130	NA	330	0.16
37	0-5 cm	NA	14,000	160	NA	230	0.21
	5-15 cm	NA	11,000	81	NA	190	0.23
38	0-5 cm	NA	24,000	240	NA	500	0.22
	5-15 cm	NA	29,000	280,***610***	NA	550	0.28
39	0-5 cm	NA	13,000	100	NA	240	0.10
	5-15 cm	NA	14,000	200	NA	240	0.23
40	0-5 cm	NA	27,000	***680***	NA	420	0.45
	5-15 cm	NA	**39,000**	***1300***	NA	490	0.47,***1.7***
41	0-5 cm	NA	19,000	130	NA	590	0.05
	5-15 cm	NA	21,000	190	NA	500	0.06
ULN		NE	35,000	500	NE	700	0.5
D&CG		NE	NE	500	NE	NE	1.0

NE - no guideline has been established for this contaminant.
< - the concentration was below the detection limit of the analytical instrumentation.
NA - not analyzed for in the November 28 samples.

Table 4: Results of Chemical Analysis for Molybdenum, Nickel, Nitrogen, Selenium, Silver and Sodium in Soil Collected in the Vicinity of the Truscan Property, Landry St., Vanier on August 9 and November 28, 1990.

Site Number	Soil Depth	Molybdenum µg/g	Nickel µg/g	Nitrogen mg/g	Selenium µg/g	Silver µg/g	Sodium µg/g
1	0-5 cm	<0.2	13	2.8	0.42	<0.1	210
	5-15 cm	0.4	17	1.6	0.57	0.15	240
2	0-5 cm	<0.2	15	2.4	0.51	<0.1	290
	5-15 cm	<0.2	17	0.85	0.49	<0.1	310
3	0-5 cm	<0.2	17	2.7	0.93	<0.1	280
	5-15 cm	<0.2	17	1.7	0.87	<0.1	290
4	0-5 cm	<0.2	9.6	0.45	<0.20	<0.1	200
	5-15 cm	<0.2	9.6	0.35	<0.20	<0.1	150
5	0-5 cm	<0.2	11	1.9	0.32	<0.1	260
	5-15 cm	<0.2	12	0.9	0.33	<0.1	320
6	0-5 cm	<0.2	8.1	2.7	0.48	0.1	130
	5-15 cm	<0.2	8.2	1.7	0.45	<0.1	130
7	0-5 cm	<0.2	13	2.5	0.46	<0.1	150
	5-15 cm	<0.2	12	1.3	0.33	<0.1	160
8	0-5 cm	<0.2	11	2.2	0.39	<0.1	160
	5-15 cm	1.5	39	1.8	0.80	<0.1	170
9	0-5 cm	<0.2	18	3.4	0.53	0.15	240
	5-15 cm	0.75	21	2.0	0.70	<0.1	300
10	0-5 cm	1.9	20	2.7	0.36	0.25	200
	5-15 cm	1.9	23	1.5	0.38	<0.1	240
11	0-5 cm	**3.8**	32	3.0	0.63	<0.1	170
	5-15 cm	2.9	34	2.7	0.68	<0.1	170
12	0-5 cm	1.5	15	2.8	0.53	0.25	170
	5-15 cm	1.4	12	2.0	0.45	<0.1	150
13	0-5 cm	3.0	25	3.7	1.4	0.45	180
	5-15 cm	***5.4***	42	3.3	***2.3***	0.9	280
14	0-5 cm	2.0	15	2.9	0.75	<0.1	180
	5-15 cm	1.4	18	1.9	0.65	<0.1	200
15	0-5 cm	2.8	27	4.1	1.1	0.85	250
	5-15 cm	**3.3**	34	3.6	1.3	9.4	290
16	0-5 cm	**3.4**	23	2.9	0.67	<0.1	210
	5-15 cm	**3.2**	27	1.9	0.61	<0.1	240
ULN		3	60	NE	2	NE	NE
D&CG		5	200	5	2	25	NE

NE - no guideline has been established for this contaminant.
< - the concentration was below the detection limit of the analytical instrumentation.

Table 4: Continued

Site Number	Soil Depth	Molybdenum µg/g	Nickel µg/g	Nitrogen mg/g	Selenium µg/g	Silver µg/g	Sodium µg/g
17	0-5 cm	1.2	18	NA	0.69	NA	150
	5-15 cm	1.2	24	NA	0.84	NA	190
18	0-5 cm	1.1	25	NA	2.0	NA	180
	5-15 cm	2.0	27	NA	**2.5**	NA	190
19	0-5 cm	0.6	13	NA	0.85	NA	140
	5-15 cm	1.0	14	NA	1.2	NA	150
20	0-5 cm	1.3	17	NA	0.95	NA	130
	5-15 cm	1.2	20	NA	1.3	NA	160
21	0-5 cm	1.1	18	NA	0.79	NA	190
	5-15 cm	1.3	13	NA	0.89	NA	140
22	0-5 cm	1.3	27	NA	1.7	NA	180
	5-15 cm	1.8	29	NA	1.8	NA	190
23	0-5 cm	1.6	14	NA	0.38	NA	150
	5-15 cm	0.9	14	NA	0.41	NA	150
24	0-5 cm	1.7	32	NA	**2.2**	NA	230
	5-15 cm	1.9	34	NA	**2.2**	NA	230
25	0-5 cm	1.8	26	NA	1.2	NA	210
	5-15 cm	1.1	18	NA	0.93	NA	180
26	0-5 cm	**3.8**	53	NA	**3.1**	NA	280
	5-15 cm	**4.3**	63	NA	**3.8**	NA	360
27	0-5 cm	1.3	17	NA	0.77	NA	170
	5-15 cm	2.9	35	NA	1.4	NA	220
28	0-5 cm	2.3	35	NA	**2.1**	NA	230
	5-15 cm	2.4	45	NA	**2.4**	NA	270
29	0-5 cm	1.5	21	NA	1.4	NA	190
	5-15 cm	2.3	33	NA	2.0	NA	230
ULN		3	60	NE	2	NE	NE
D&CG		5	200	5	2	25	NE

NE - no guideline has been established for this contaminant.
< - the concentration was below the detection limit of the analytical instrumentation.
NA - not analyzed for in the November 28 samples.

Table 4: Continued

Site Number	Soil Depth	Molybdenum µg/g	Nickel µg/g	Nitrogen mg/g	Selenium µg/g	Silver µg/g	Sodium µg/g
30	0-5 cm	1.7	26	NA	1.3	NA	200
	5-15 cm	1.9	28	NA	1.4	NA	210
31	0-5 cm	1.0	19	NA	0.37	NA	240
	5-15 cm	1.6	18	NA	0.62	NA	180
32	0-5 cm	0.6	20	NA	1.0	NA	200
	5-15 cm	1.2	21	NA	1.2	NA	190
33	0-5 cm	1.1	15	NA	0.49	NA	140
	5-15 cm	0.5,2.3	20	NA	0.78	NA	180
34	0-5 cm	1.0	21	NA	1.4	NA	200
	5-15 cm	1.9	30	NA	**2.2**	NA	240
35	0-5 cm	1.7	26	NA	0.99	NA	170
	5-15 cm	1.4	30	NA	1.2	NA	190
36	0-5 cm	1.3	18	NA	0.65	NA	120
	5-15 cm	1.1	19	NA	0.65	NA	130
37	0-5 cm	0.5	16	NA	0.49	NA	160
	5-15 cm	0.6	12	NA	0.31	NA	160
38	0-5 cm	1.7	23	NA	1.4	NA	150
	5-15 cm	**3.4**	33	NA	1.8	NA	230
39	0-5 cm	0.7	14	NA	0.38	NA	150
	5-15 cm	0.7	17	NA	0.49	NA	160
40	0-5 cm	2.3	27	NA	1.4	NA	230
	5-15 cm	**3.1**	35	NA	1.7	NA	260
41	0-5 cm	0.5,1.2	18	NA	0.42	NA	150
	5-15 cm	1.1	25	NA	0.65	NA	180
ULN		3	60	NE	2	NE	NE
D&CG		5	200	5	2	25	NE

NE - no guideline has been established for this contaminant.
< - the concentration was below the detection limit of the analytical instrumentation.
NA - not analyzed for in the November 28 samples.

Table 5: Results of Chemical Analysis for Strontium, Sulphur, Titanium, Uranium, Vanadium and Zinc in Soil Collected in the Vicinity of the Truscan Property, Landry St., Vanier on August 9 and November 28, 1990.

Site Number	Soil Depth	Strontium µg/g	Sulphur %	Titanium µg/g	Uranium µg/g	Vanadium µg/g	Zinc µg/g
1	0-5 cm	26	0.036	0.34	0.6	30	81
	5-15 cm	30	0.027	0.34	0.4	33	84
2	0-5 cm	35	0.034	0.35	1.1	39	45
	5-15 cm	30	0.015	0.34	0.9	39*	36
3	0-5 cm	130	0.062	0.28	1.1	35	84
	5-15 cm	52	0.030	0.34	1.6	40	52
4	0-5 cm	400	0.037	0.11	0.3	19	20
	5-15 cm	640	0.062	0.04	0.3	11	12
5	0-5 cm	33	0.027	0.34	1.0	36	41
	5-15 cm	29	0.016	0.35	0.9	38	32
6	0-5 cm	20	0.044	0.33	0.3	27	77
	5-15 cm	18	0.022	0.30	0.3	26	65
7	0-5 cm	27	0.038	0.33	0.5	33	62
	5-15 cm	48	0.032	0.30	0.4	30	52
8	0-5 cm	19	0.028	0.33	0.7	27	35
	5-15 cm	47	0.033	0.37	1.2	46	77
9	0-5 cm	30	0.051	0.36	0.7	37	240
	5-15 cm	30	0.038	0.39	0.7	36	280
10	0-5 cm	37	0.046	0.34	1.0	33	99
	5-15 cm	64	0.049	0.30	1.2	30	66
11	0-5 cm	35	0.038	0.50	1.2	58	160
	5-15 cm	37	0.036	0.46	1.1	60	150
12	0-5 cm	37	0.050	0.38	0.6	25	160
	5-15 cm	29	0.041	0.39	0.5	21	130
13	0-5 cm	65	0.062	0.41	0.6	25	440
	5-15 cm	130	0.076	0.48	0.5	25	760
14	0-5 cm	36	0.045	0.37	0.5	30	200
	5-15 cm	35	0.034	0.40	0.5	32	170
15	0-5 cm	69	0.072	0.40	0.6	33	450
	5-15 cm	79	0.070	0.44	0.6	38	490
16	0-5 cm	29	0.043	.0.32	0.7	30	110
	5-15 cm	31	0.032	0.32	0.6	32	91
ULN		NE	NE	NE	NE	70	500
D&CG		NE	NE	NE	NE	250*	800

NE - no guideline has been established for this contaminant.
< - the concentration was below the detection limit of the analytical instrumentation.
* - provisional D&CG

Table 5: Continued

Site Number	Soil Depth	Strontium µg/g	Sulphur %	Titanium µg/g	Uranium µg/g	Vanadium µg/g	Zinc µg/g
17	0-5 cm	28	NA	NA	NA	35	160
	5-15 cm	33	NA	NA	NA	39	190
18	0-5 cm	46	NA	NA	NA	35	**530**
	5-15 cm	58	NA	NA	NA	33	**550**
19	0-5 cm	26	NA	NA	NA	30	180
	5-15 cm	30	NA	NA	NA	31	210
20	0-5 cm	31	NA	NA	NA	32	280
	5-15 cm	45	NA	NA	NA	30	390
21	0-5 cm	38	NA	NA	NA	34	170
	5-15 cm	29	NA	NA	NA	27	220
22	0-5 cm	59	NA	NA	NA	33	**700**
	5-15 cm	68	NA	NA	NA	33	**750**
23	0-5 cm	20	NA	NA	NA	31	170
	5-15 cm	21	NA	NA	NA	32	150
24	0-5 cm	65	NA	NA	NA	44	***860***
	5-15 cm	77	NA	NA	NA	42	***810***
25	0-5 cm	82	NA	NA	NA	34	**540**
	5-15 cm	63	NA	NA	NA	25	380
26	0-5 cm	120	NA	NA	NA	43	***1000***
	5-15 cm	200	NA	NA	NA	47	***1200***
27	0-5 cm	41	NA	NA	NA	31	210
	5-15 cm	80	NA	NA	NA	36	**670**
28	0-5 cm	81	NA	NA	NA	43	**760**
	5-15 cm	92	NA	NA	NA	47	***870***
29	0-5 cm	40	NA	NA	NA	33	450
	5-15 cm	61	NA	NA	NA	36	**620**
ULN		NE	NE	NE	NE	70	500
D&CG		NE	NE	NE	NE	250*	800

NE - no guideline has been established for this contaminant.
< - the concentration was below the detection limit of the analytical instrumentation.
* - provisional D&CG
NA - not analyzed for in the November 28 samples.

Table 5: Continued

Site Number	Soil Depth	Strontium µg/g	Sulphur %	Titanium µg/g	Uranium µg/g	Vanadium µg/g	Zinc µg/g
30	0-5 cm	53	NA	NA	NA	44	360
	5-15 cm	66	NA	NA	NA	42	480
31	0-5 cm	52	NA	NA	NA	38	86
	5-15 cm	46	NA	NA	NA	35	290
32	0-5 cm	36	NA	NA	NA	41	250
	5-15 cm	48	NA	NA	NA	35	330
33	0-5 cm	30	NA	NA	NA	34	180
	5-15 cm	40	NA	NA	NA	33	310
34	0-5 cm	47	NA	NA	NA	32	290
	5-15 cm	72	NA	NA	NA	38	440
35	0-5 cm	45	NA	NA	NA	39	430
	5-15 cm	61	NA	NA	NA	39	490
36	0-5 cm	22	NA	NA	NA	34	260
	5-15 cm	22	NA	NA	NA	33	260
37	0-5 cm	23	NA	NA	NA	28	280
	5-15 cm	18	NA	NA	NA	21	170
38	0-5 cm	53	NA	NA	NA	37	320
	5-15 cm	86	NA	NA	NA	43	400
39	0-5 cm	31	NA	NA	NA	27	120
	5-15 cm	51	NA	NA	NA	29	220
40	0-5 cm	50	NA	NA	NA	43	390
	5-15 cm	87	NA	NA	NA	45	620
41	0-5 cm	30	NA	NA	NA	41	240
	5-15 cm	40	NA	NA	NA	43	350
ULN		NE	NEN	NE	NE	70	500
D&CG		NE	NE	NE	NE	250*	800

NE - no guideline has been established for this contaminant.
< - the concentration was below the detection limit of the analytical instrumentation.
* - provisional D&CG
NA - not analyzed for in the November 28 samples.

Table 6: Results of Chemical Analysis of Washed Garden Vegetables from Three Properties in the Vicinity of the Truscan Property, Landry St., Vanier on August 9, 1990

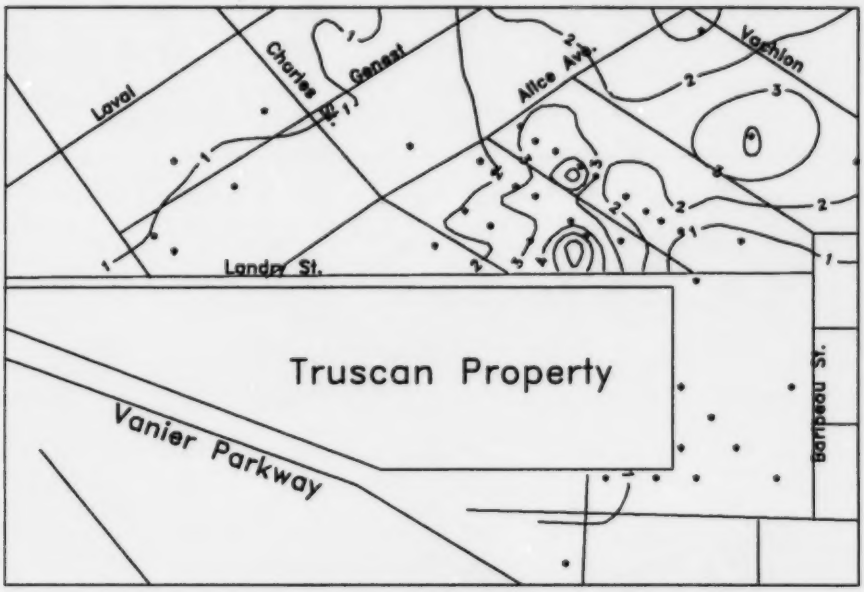
Element	Site 11 String Bean Fruit*	Site 11 Potatoes Tubers **	Site 12 String Bean Fruit*	Site 13 String Bean Fruit*s	Site 13 Leaf Lettuce Foliage	Urban ULN for Foliage
Aluminum	9	46	17	9	170	500
Antimony	0.45	0.44	0.45	0.99	0.45	0.5
Arsenic	<0.2	<0.20	<0.20	<0.20	0.71	2
Cadmium	<0.10	0.22	0.12	0.20	0.74	2
Chromium	<0.5	<0.5	<0.5	<0.5	<0.5	8
Cobalt	<0.2	<0.2	<0.2	0.3	0.9	2
Copper	8.1	12	9.2	7.6	7.3	20
Iron	69	63	69	58	280	1,000
Lead	<0.5	67	38	39	3.0	60
Manganese	11	4.3	10	14	27	100
Molybdenum	2.5	<0.2	7.8	4.7	**1.6**	1.5
Nickel	1.1	18	4.2	2.9	3.0	7
Selenium	0.21	0.21	0.21	0.51	**1.3**	0.7
Sodium	21	25	23	14	**3646**	350
Strontium	7.6	1.4	19	21	190	NG
Vanadium	<0.5	<0.5	<0.5	<0.5	<0.5	5
Zinc	33	20	43	26	100	250

NG - no Urban Upper Limit of Normal guideline established.

* - include seeds plus edible pods

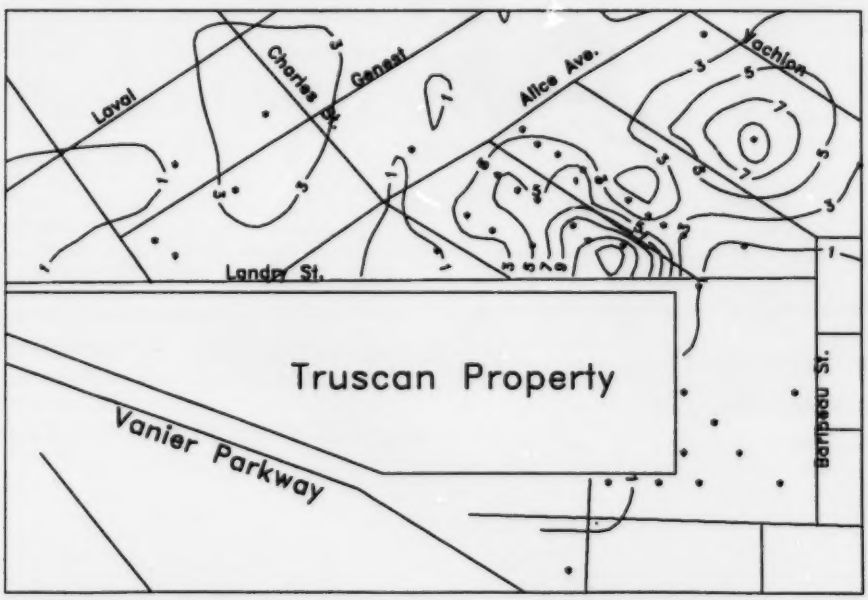
** - skin not removed

Figure 2.: Antimony in Soil (0-5cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



Contour Interval = 2 Minimum Contour = 1 Maximum Contour = 6

Figure 3.: Antimony in Soil (5-15cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



Contour Interval = 2 Minimum Contour = 1 Maximum Contour = 14

Figure 4. : Arsenic in Soil (0-5cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990

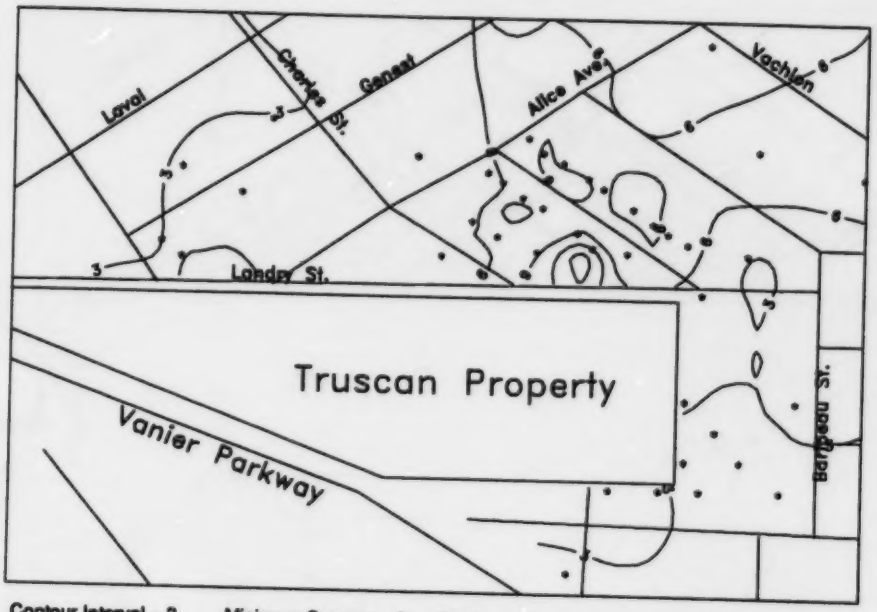


Figure 5. : Arsenic in Soil (5-15cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990

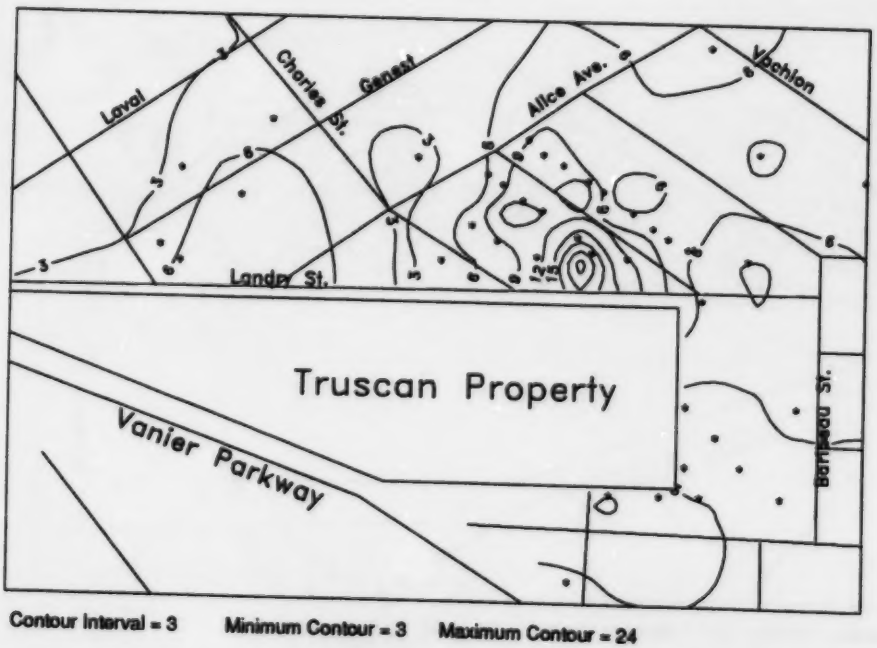
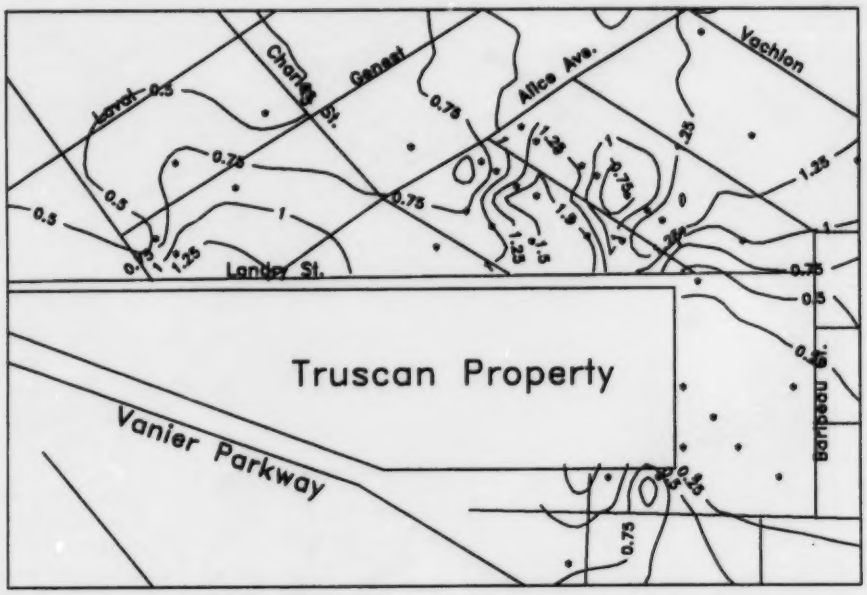
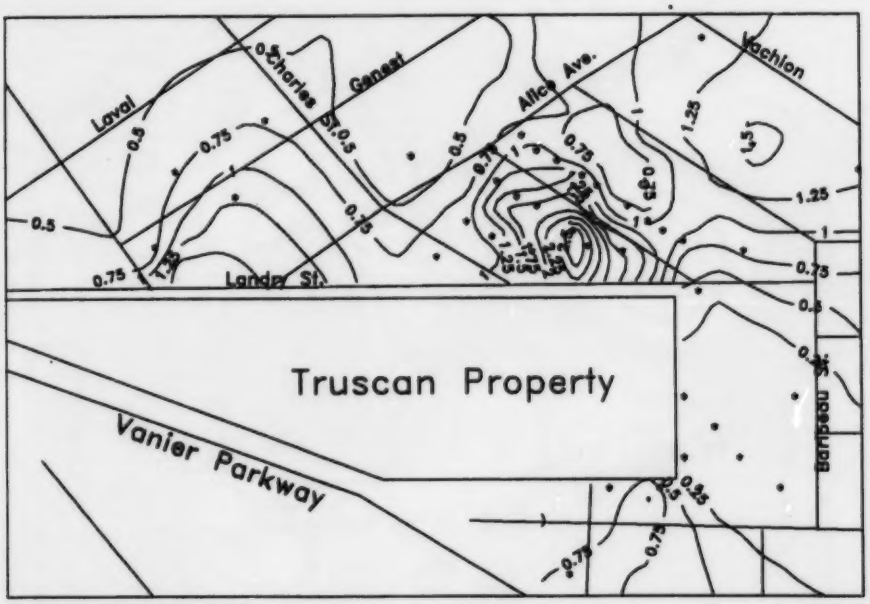


Figure 6.: Cadmium in Soil (0-5cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



Contour Interval = .25 Minimum Contour = .25 Maximum Contour = 1.5

Figure 7.: Cadmium in Soil (5-15cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



Contour Interval = .25 Minimum Contour = .25 Maximum Contour = 2.75

Figure 8.: Chromium in Soil (0-5cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990

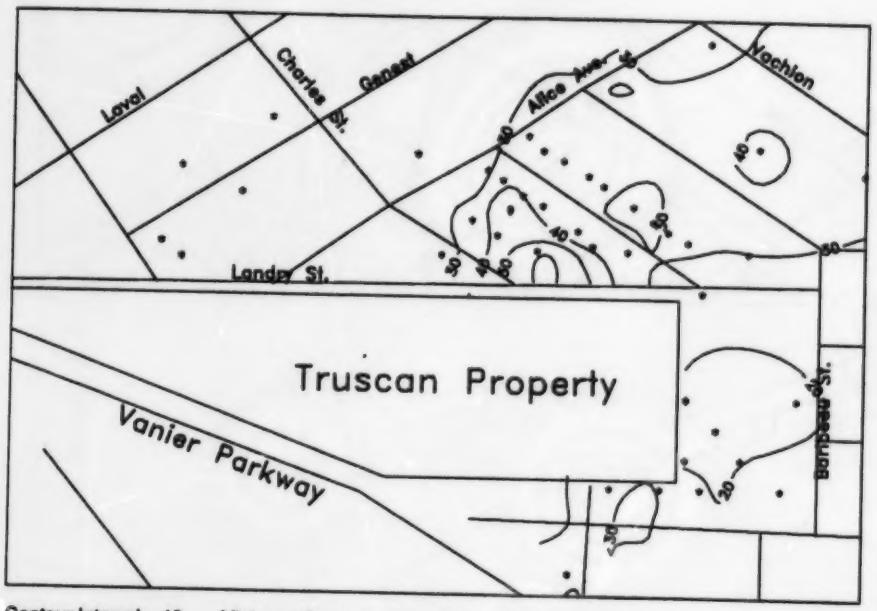


Figure 9.: Chromium in Soil (5-15cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990

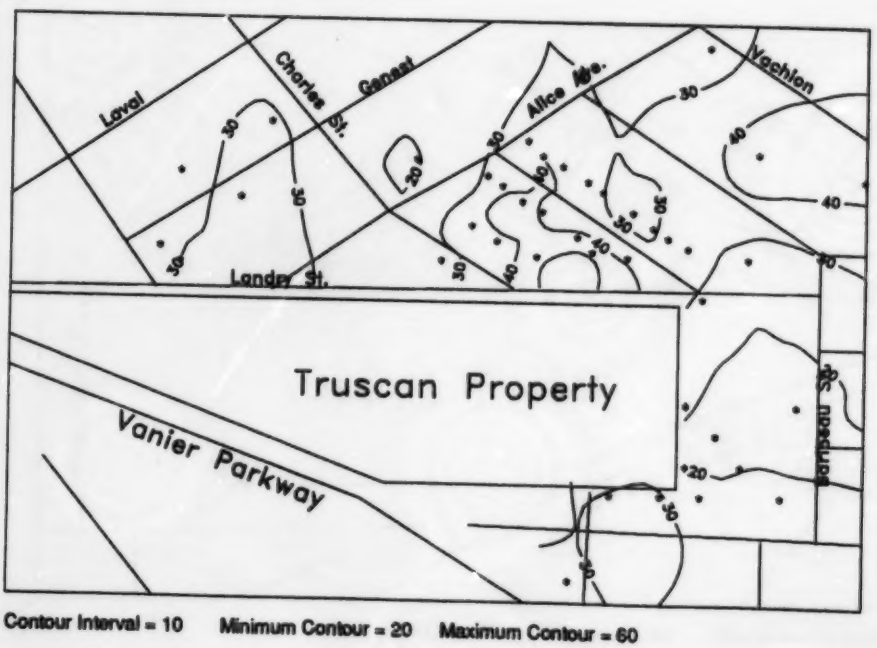
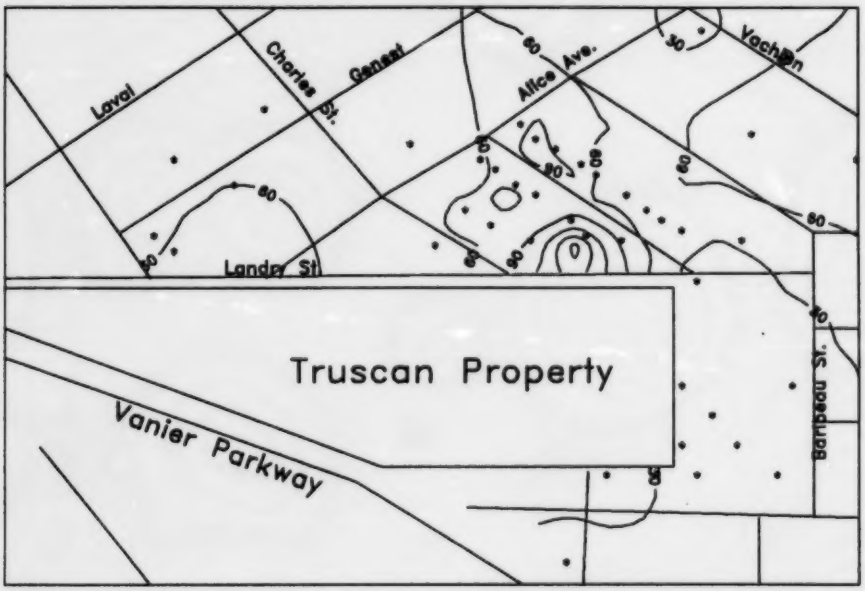
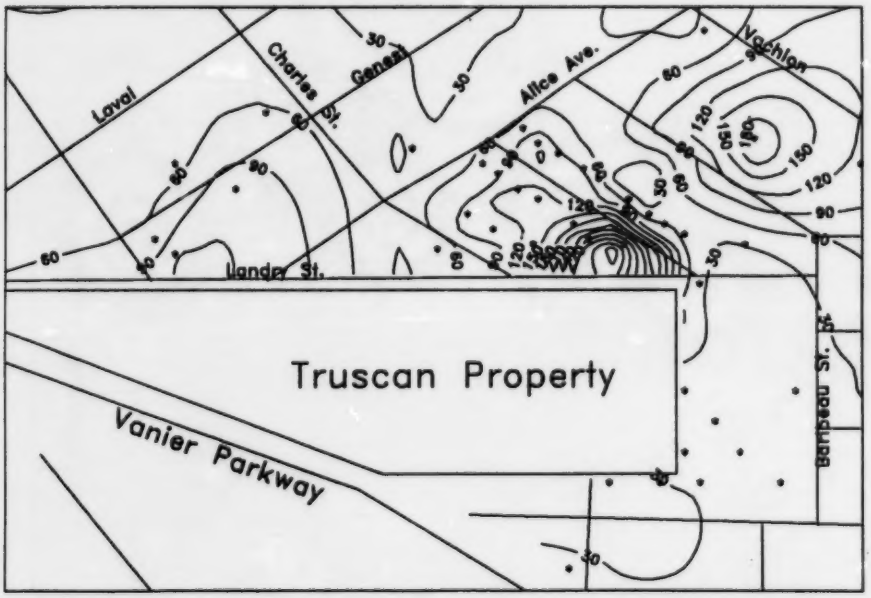


Figure 10.: Copper in Soil (0-5cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



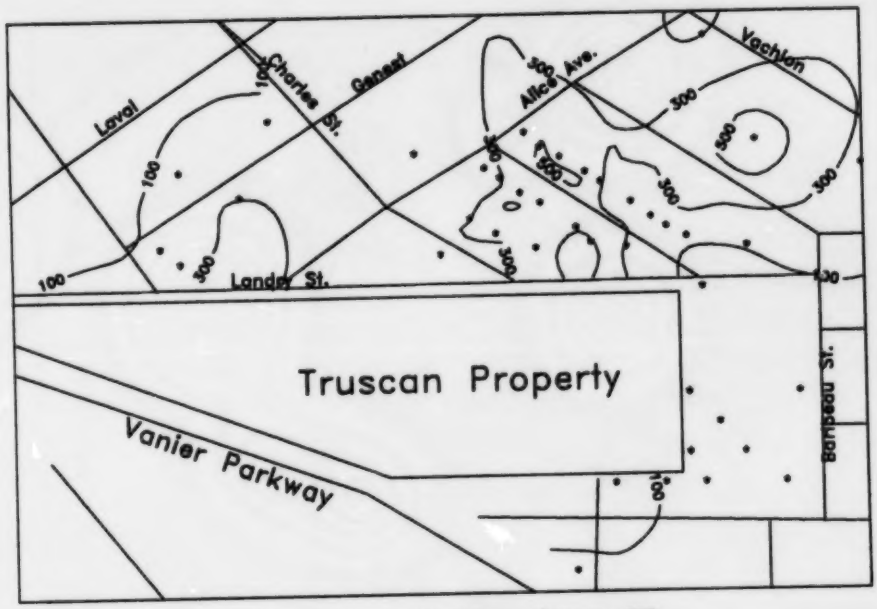
Contour Interval = 30 Minimum Contour = 30 Maximum Contour = 190

Figure 11.: Copper in Soil (5-15cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



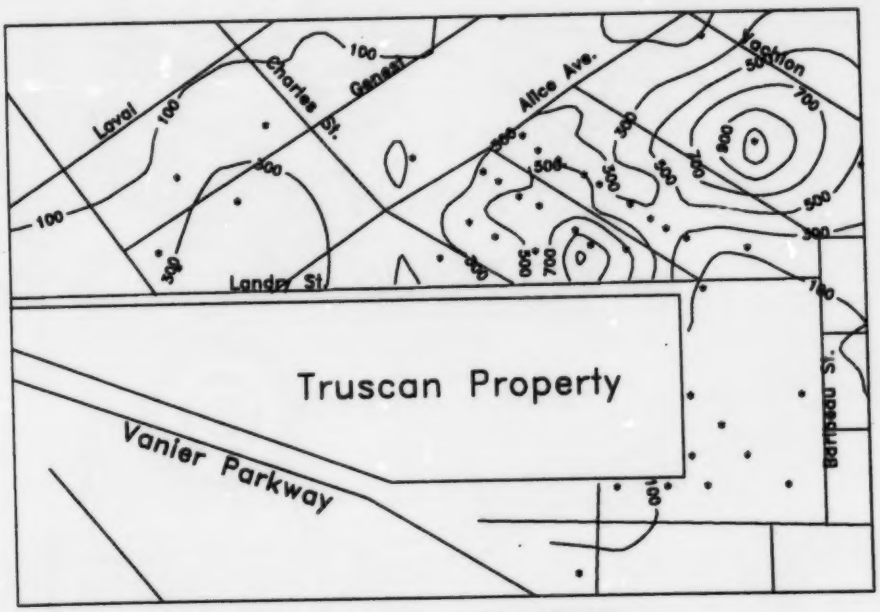
Contour Interval = 30 Minimum Contour = 30 Maximum Contour = 370

Figure 12. : Lead in Soil (0-5cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



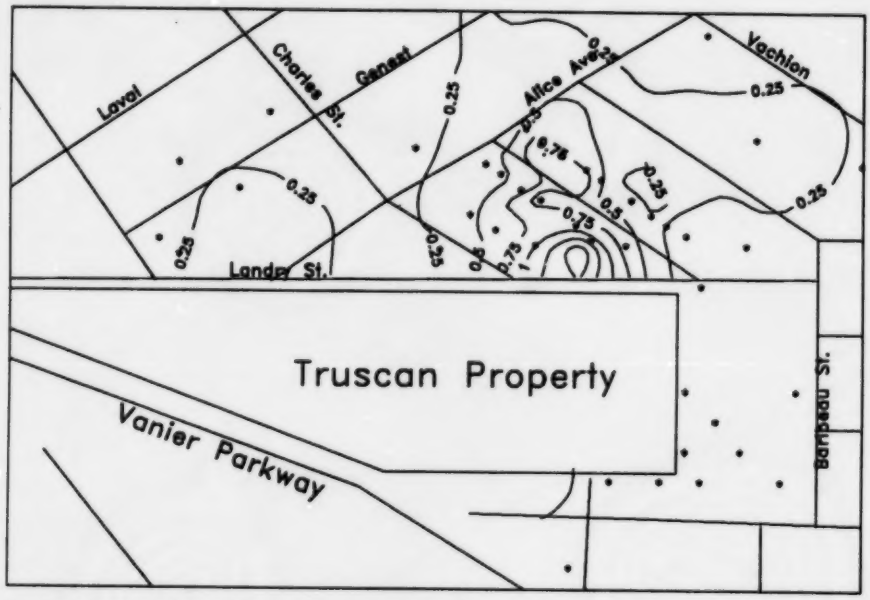
Contour Interval = 200 Minimum Contour = 100 Maximum Contour = 600

Figure 13. : Lead in Soil (5-15cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



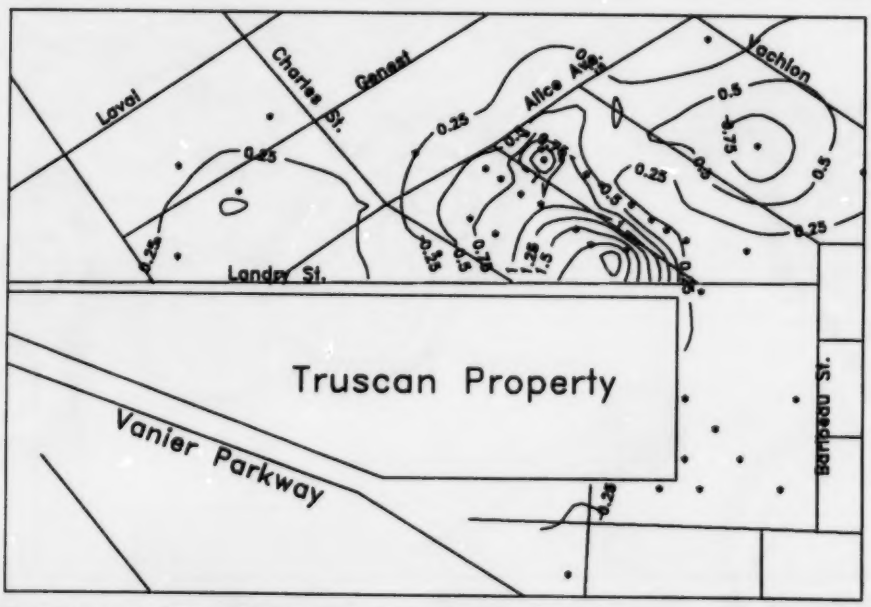
Contour Interval = 200 Minimum Contour = 100 Maximum Contour = 1200

Figure 14.: Mercury in Soil (0-5cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



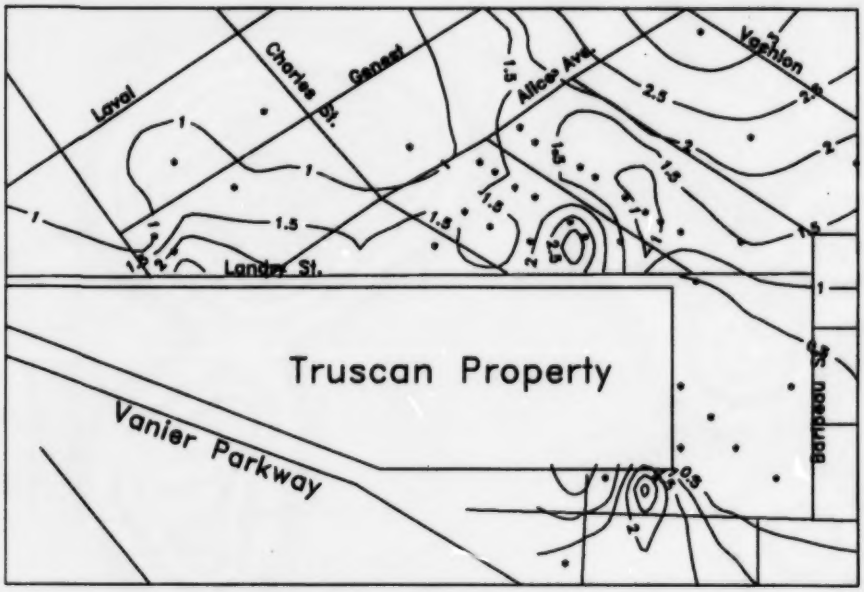
Contour Interval = .25 Minimum Contour = .25 Maximum Contour = 1.75

Figure 15.: Mercury in Soil (5-15cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



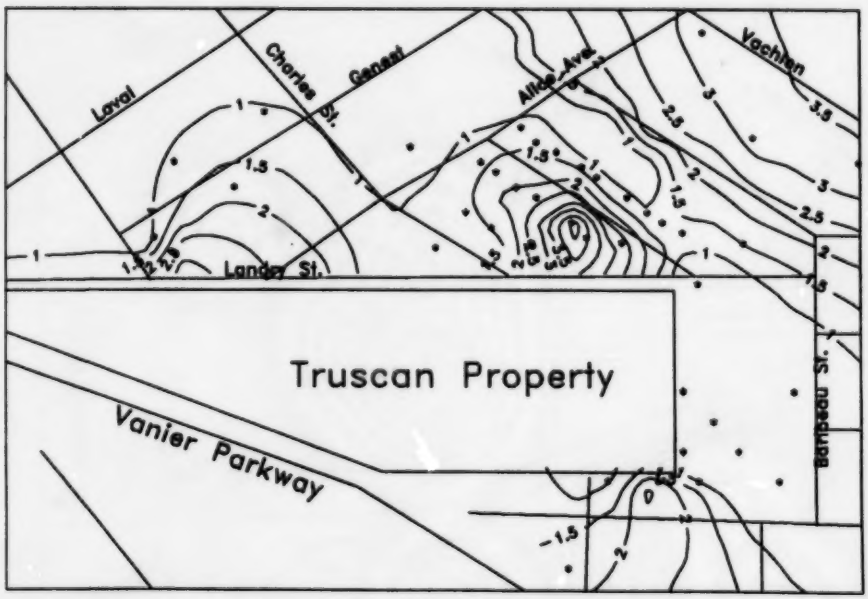
Contour Interval = .25 Minimum Contour = .25 Maximum Contour = 2

Figure 16.: Molybdenum in Soil (0-5cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



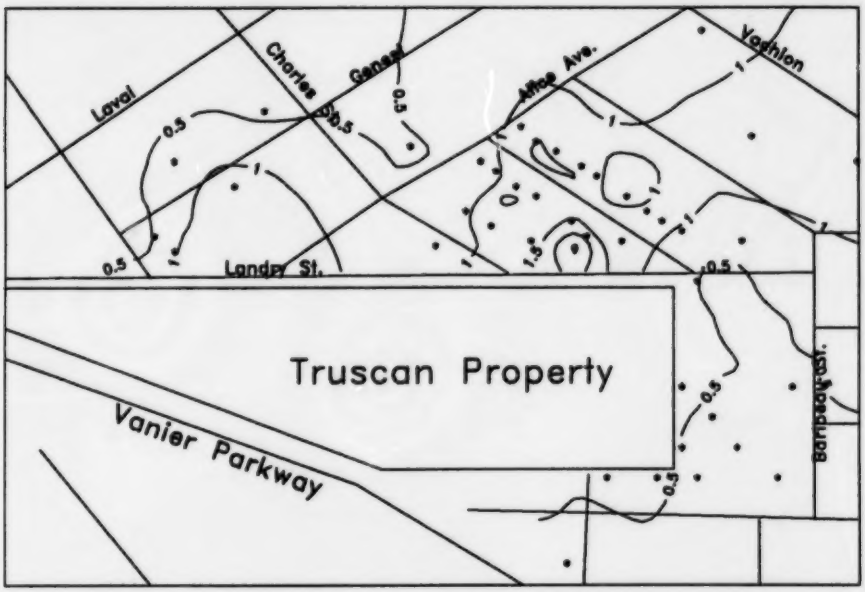
Contour Interval = .5 Minimum Contour = 1 Maximum Contour = 3

Figure 17.: Molybdenum in Soil (5-15cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



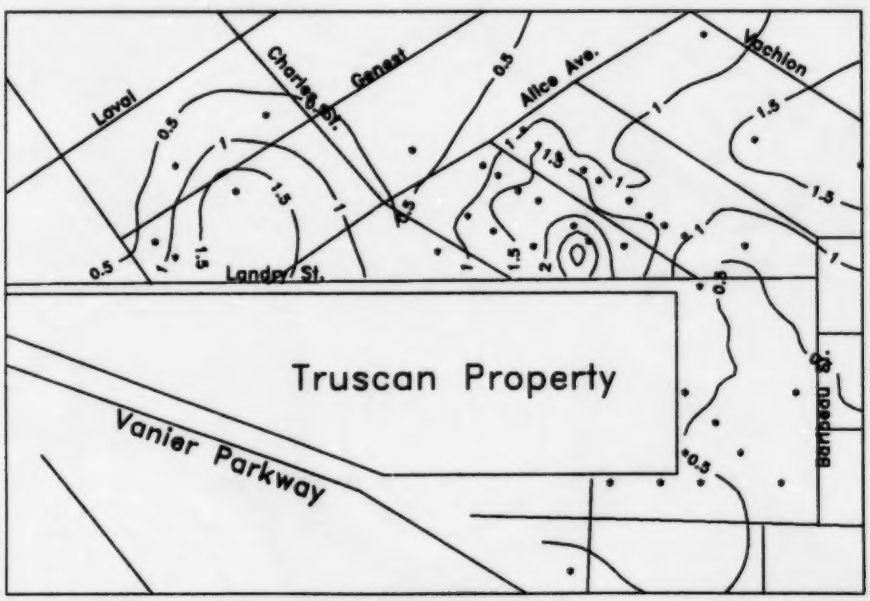
Contour Interval = .5 Minimum Contour = 1 Maximum Contour = 4.5

Figure 18. : Selenium in Soil (0-5cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



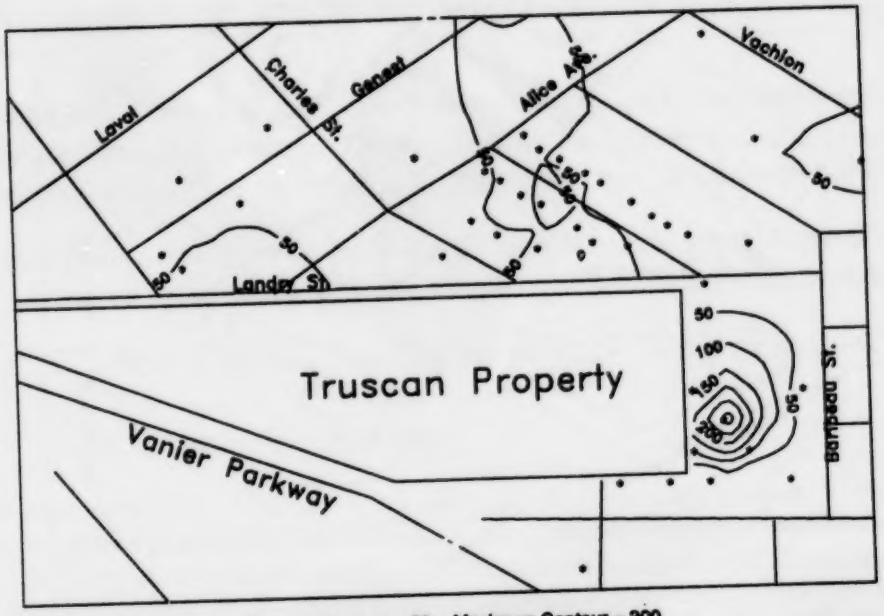
Contour Interval = .5 Minimum Contour = .5 Maximum Contour = 2.5

Figure 19. : Selenium in Soil (5-15cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



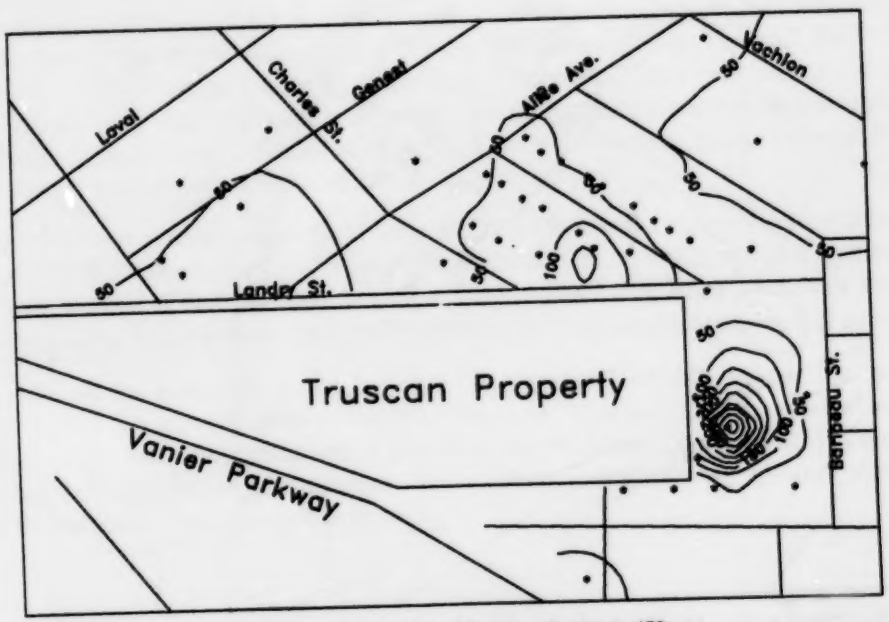
Contour Interval = .5 Minimum Contour = .5 Maximum Contour = 3

Figure 20.: Strontium in Soil (0-5cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



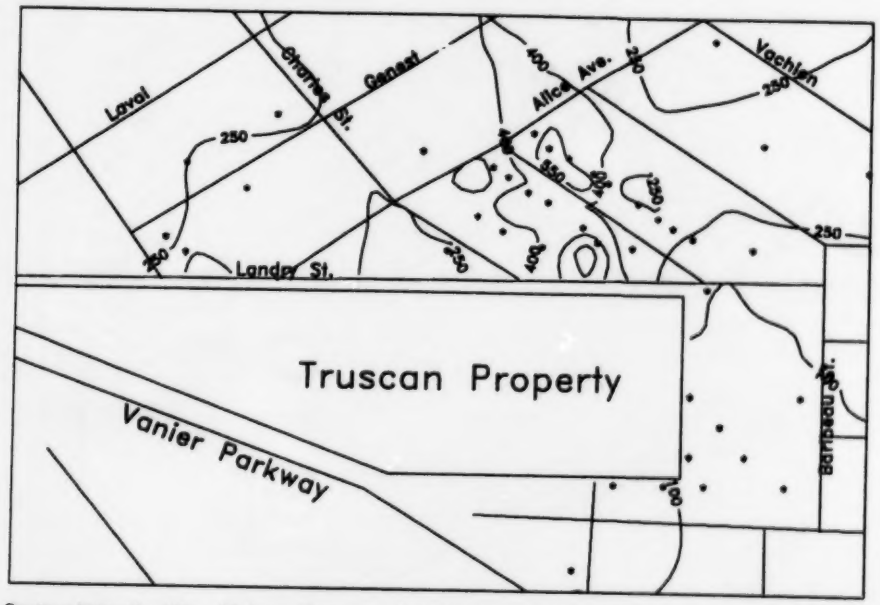
Contour Interval = 50 Minimum Contour = 50 Maximum Contour = 300

Figure 21.: Strontium in Soil (5-15cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



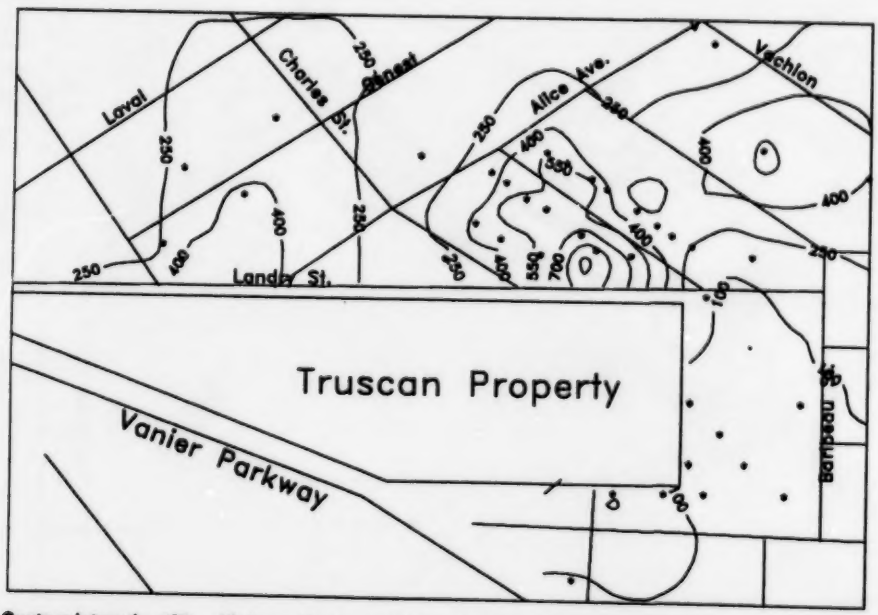
Contour Interval = 50 Minimum Contour = 50 Maximum Contour = 450

Figure 22.: Zinc in Soil (0-5cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



Contour Interval = 150 Minimum Contour = 100 Maximum Contour = 800

Figure 23.: Zinc in Soil (5-15cm depth) Collected in the Vicinity of the Truscan Property, Landry St., Vanier, Ontario in August and November, 1990



Contour Interval = 150 Minimum Contour = 100 Maximum Contour = 1000

Appendix B: References

(1) Ontario Ministry of the Environment, Air Resources Branch. 1983. Field Investigation Manual. Phytotoxicology Section - Air Resources Branch; Technical Support Sections - NE and NW Regions

(2) Ontario Ministry of the Environment, Air Resources Branch. 1989. Ontario Ministry of the Environment "Upper Limit of Normal" Contaminant Guidelines for Phytotoxicology Samples. Phytotoxicology Section - Air Resources Branch ARB-138-88-Phyto. ISBN: 0-7729-5143-8

(3) Ontario Ministry of the Environment, Waste Management Branch. 1989. Guidelines for the Decommissioning and Cleanup of Sites in Ontario. ISBN 0-7729-5278-7, PIBS 141 E.

Appendix C: Derivation and Significance of MOE "Upper Limits of Normal" Contaminant Guidelines

The MOE "upper limits of normal" contaminant guidelines essentially represent the expected maximum concentration of contaminants in surface soil (non-agricultural), foliage (tree and shrub), grass, moss bags and or snow from areas of Ontario not subject to the influence of point sources of emissions. "Urban" guidelines are based upon samples collected from centers of minimum 10,000 population. "Rural" guidelines are based upon samples collected from non-built-up areas. Samples were collected by MOE personnel using standard sampling techniques (ref: Ministry of the Environment, 1983. Field Investigation Manual. Phytotoxicology Section - Air Resources Branch: Technical Support Sections - NE and NW Regions). Chemical analyses were performed by the MOE Laboratory Services Branch.

The guidelines were calculated by taking the arithmetic mean of available analytical data and adding three standard deviations of the mean. For those distributions that are "normal", 99% of all contaminant levels in samples from "background" locations (i.e. not affected by point sources nor agricultural activities) will lie below these upper limits of normal. For those distributions that are non-normal, the calculated upper limits of normal will not actually equal the 99th percentile, but nevertheless they lie within the observed upper range of MOE results for Ontario samples.

Due to the large variability in element concentrations which may be present across Ontario, even in background data, control samples should always be collected. This is particularly important for soils, which may show large regional variations in element composition due to difference in parent material. Species of vegetation which naturally accumulate high levels of an element also may be encountered.

It is stressed that these guidelines do not represent maximum desirable or allowable levels of contaminants. Rather, they serve as levels which, if exceeded, would prompt further investigation on a case by case basis to determine the significance, if any, of the above normal concentration(s). Concentrations which exceed the guidelines are not necessarily toxic to plants, animals or man. Concentrations which are below the guidelines are not known to be toxic.